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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/538,136	06/09/2005	Takeshi Kimura	05361/GH	1531

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EXAMINER	
SINCLAIR, DAVID M	

ART UNIT	PAPER NUMBER
2831	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/538,136	KIMURA ET AL.	
	Examiner	Art Unit	
	DAVID M. SINCLAIR	2831	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 May 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2 and 4-6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2 and 4-6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1-2 & 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takezawa et al. (2002/0043652) in view of JP10-022170 hereafter referred to as Fujuda.

In regards to claim 1,

Takezawa '652 discloses a thermosetting conductive adhesive ([0021]) useable in electronics, said thermosetting conductive paste comprising conductive particles having a high melting point of 400°C or more ([0026]), metal powder ([0028]) having a melting point of 300 °C or less and a thermosetting resin(s)

([0044]), and wherein the metal powder having a melting point of 300°C or less is present in an amount by weight based on the total weight of said conductive particles having a high melting point and said metal powder having a melting point of 300°C or less, of from 5% to 17.6% ([0027] & [0031]) .

Fujuda discloses a multilayer ceramic electronic part having an external electrode formed from a conductive adhesive which is then cured (fig. 1; [0001], [0008-0010]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to form a multilayer ceramic electronic part as disclosed by Fujuda using the conductive adhesive of Takezawa '652 as the external electrodes to obtain a multilayer ceramic electronic part wherein the external electrodes having improved corrosion resistance.

In regards to claim 2,

The references as applied above disclose all the limitations of claim 2 except the total content of said conductive particles having a high melting point and said metal powder having a melting point of 300 °C or less in said thermosetting conductive paste is in the range of 70 to 95% by weight relative to the total weight of said conductive particles having a high melting point, said metal powder having a melting point of 300 °C or less, and said resin. However,

Takezawa '652 further discloses the total content of said conductive particles having a high melting point and said metal powder having a melting point of 300 °C or less in said thermosetting conductive paste is in the range of 70 to 95% by weight relative to the total weight of said conductive particles having a high melting point, said metal powder having a melting point of 300 °C or less, and said resin ([0045], [0027] & [0031]).

In regards to claim 4,

Takezawa '652 discloses providing a thermosetting conductive adhesive ([0021]) useable in electronics, said thermosetting conductive paste comprising conductive particles having a high melting point of 400°C or more ([0026]), metal powder ([0028]) having a melting point of 300 °C or less and a thermosetting resin(s) ([0044]), and wherein the metal powder having a melting point of 300°C or less is present in an amount by weight based on the total weight of said conductive particles having a high melting point and said metal powder having a melting point of 300°C or less, of from 5% to 17.6% ([0027] & [0031]); said conductive paste is cured at a temperature of 80 °C to 400 °C for a period of one to sixty minutes ([0060]).

Fujuda discloses a method of manufacturing a multilayer ceramic electronic part comprising the steps of providing a conductive adhesive, a ceramic composite body which is to be provided with an external electrode(s); printing or applying

said conductive adhesive on or to a surface(s) where an internal electrode(s) of said ceramic composite body is led out; and curing said conductive paste to form said external electrode(s) (fig. 1; [0001], [0008-0010]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to form a multilayer ceramic electronic part as disclosed by Fujuda using the conductive adhesive of Takezawa '652 as the external electrodes to obtain a multilayer ceramic electronic part wherein the external electrodes having improved corrosion resistance.

In regards to claim 5,

The references as applied above disclose all the limitations of claim 5 except the conductive particle in said external electrode makes a diffused junction with a metal of said internal electrode of said multilayer ceramic composite body. However, the combination of Takezawa '652 and Fujuda further discloses the conductive particle in said external electrode makes a diffused junction with a metal of said internal electrode of said multilayer ceramic composite body (the diffused junction is caused by the method of manufacturing therefore the method taught by the combination of Takezawa '652 and Fujuda which disclose the method of claim 4 would inherently create a diffused junction between the internal and external electrodes).

In regards to claim 6,

The references as applied above disclose all the limitations of claim 6 except the multilayer ceramic electronic part is selected from the group consisting of a capacitor, a capacitor array, a thermistor, a varistor, an LC composite part, a CR composite part, an LR composite part, and an LCR composite part.

However, Fujuda discloses the multilayer ceramic electronic part is selected from the group consisting of a capacitor, a capacitor array, a thermistor, a varistor, an LC composite part, a CR composite part, an LR composite part, and an LCR composite part (fig. 1; [0001], [0008-0010]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to form a multilayer ceramic electronic part as disclosed by Fujuda using the conductive adhesive of Takezawa '652 as the external electrodes to obtain a multilayer ceramic electronic part wherein the external electrodes having improved corrosion resistance.

4. Claims 1-2 & 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carson et al. (5,463,190) in view of Fujuda.

In regards to claim 1,

Carson '190 discloses a thermosetting conductive adhesive (abstract) useable in electronics, said thermosetting conductive paste comprising conductive particles

having a high melting point of 400°C or more, metal powder having a melting point of 300 °C or less and a thermosetting resin(s) (C4:L7-30). Carson '190 fails to disclose the metal powder having a melting point of 300°C or less is present in an amount by weight based on the total weight of said conductive particles having a high melting point and said metal powder having a melting point of 300°C or less, of from 5% to 17.6%.

Fujuda discloses a method of manufacturing a multilayer ceramic electronic part comprising the steps of providing a conductive adhesive, a ceramic composite body which is to be provided with an external electrode(s); printing or applying said conductive adhesive on or to a surface(s) where an internal electrode(s) of said ceramic composite body is led out; and curing said conductive paste to form said external electrode(s) (fig. 1; [0001], [0008-0010]). Fujuda fails to disclose the metal powder having a melting point of 300°C or less is present in an amount by weight based on the total weight of said conductive particles having a high melting point and said metal powder having a melting point of 300°C or less, of from 5% to 17.6%.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to form a multilayer ceramic electronic part as disclosed by Fujuda using the conductive adhesive of Carson '190 as the external electrodes

to obtain a multilayer ceramic electronic part wherein the external electrodes have good electrical and mechanical properties.

Carson '190 and Fujuda disclose the claimed invention except for the metal powder having a melting point of 300°C or less is present in an amount by weight based on the total weight of said conductive particles having a high melting point and said metal powder having a melting point of 300°C or less, of from 5% to 17.6. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the metal powder having a melting point of 300°C or less in an amount by weight based on the total weight of said conductive particles having a high melting point and said metal powder having a melting point of 300°C or less, of from 5% to 17.6 to obtain an external electrode with improved electrical conductivity and mechanical strength, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

In regards to claim 2,

The references as applied above disclose all the limitations of claim 2 except the total content of said conductive particles having a high melting point and said metal powder having a melting point of 300 °C or less in said thermosetting conductive paste is in the range of 70 to 95% by weight relative to the total

weight of said conductive particles having a high melting point, said metal powder having a melting point of 300 °C or less, and said resin. However, Carson '190 further discloses the total content of said conductive particles having a high melting point and said metal powder having a melting point of 300 °C or less in said thermosetting conductive paste is in the range of 70 to 95% by weight relative to the total weight of said conductive particles having a high melting point, said metal powder having a melting point of 300 °C or less, and said resin (C4:L7-30).

In regards to claim 4,

Carson '190 discloses providing a thermosetting conductive adhesive useable in electronics, said thermosetting conductive paste comprising conductive particles having a high melting point of 400°C or more, metal powder having a melting point of 300 °C or less and a thermosetting resin(s) (C4:L7-30), said conductive paste is cured at a temperature of 80 °C to 400 °C for a period of one to sixty minutes (C4:L66 to C5:L11). Carson '190 fails to disclose the metal powder having a melting point of 300°C or less is present in an amount by weight based on the total weight of said conductive particles having a high melting point and said metal powder having a melting point of 300°C or less, of from 5% to 17.6%.

Fujuda discloses a method of manufacturing a multilayer ceramic electronic part comprising the steps of providing a conductive adhesive, a ceramic composite

body which is to be provided with an external electrode(s); printing or applying said conductive adhesive on or to a surface(s) where an internal electrode(s) of said ceramic composite body is led out; and curing said conductive paste to form said external electrode(s) (fig. 1; [0001], [0008-0010]). Fujuda fails to disclose the metal powder having a melting point of 300°C or less is present in an amount by weight based on the total weight of said conductive particles having a high melting point and said metal powder having a melting point of 300°C or less, of from 5% to 17.6%.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to form a multilayer ceramic electronic part as disclosed by Fujuda using the conductive adhesive of Carson '190 as the external electrodes to obtain a multilayer ceramic electronic part wherein the external electrodes have good electrical and mechanical properties.

Carson '190 and Fujuda disclose the claimed invention except for the metal powder having a melting point of 300°C or less is present in an amount by weight based on the total weight of said conductive particles having a high melting point and said metal powder having a melting point of 300°C or less, of from 5% to 17.6. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the metal powder having a melting point of 300°C or less in an amount by weight based on the total weight of said

conductive particles having a high melting point and said metal powder having a melting point of 300°C or less, of from 5% to 17.6 to obtain an external electrode with improved electrical conductivity and mechanical strength, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

In regards to claim 5,

The references as applied above disclose all the limitations of claim 5 except the conductive particle in said external electrode makes a diffused junction with a metal of said internal electrode of said multilayer ceramic composite body. However, the combination of Carson ‘190 and Fujuda further discloses the conductive particle in said external electrode makes a diffused junction with a metal of said internal electrode of said multilayer ceramic composite body (the diffused junction is caused by the method of manufacturing therefore the method taught by the combination of Carson ‘190 and Fujuda which disclose the method of claim 4 would inherently create a diffused junction between the internal and external electrodes).

In regards to claim 6,

The references as applied above disclose all the limitations of claim 6 except the multilayer ceramic electronic part is selected from the group consisting of a

capacitor, a capacitor array, a thermistor, a varistor, an LC composite part, a CR composite part, an LR composite part, and an LCR composite part.

However, Fujuda discloses the multilayer ceramic electronic part is selected from the group consisting of a capacitor, a capacitor array, a thermistor, a varistor, an LC composite part, a CR composite part, an LR composite part, and an LCR composite part (fig. 1; [0001], [0008-0010]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to form a multilayer ceramic electronic part as disclosed by Fujuda using the conductive adhesive of Carson '190 as the external electrodes to obtain a multilayer ceramic electronic part wherein the external electrodes have good electrical and mechanical properties.

Response to Arguments

5. Applicant's arguments with respect to claims 1-2 & 4-6 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

WO98/08362 – Conductive adhesive comprising Cu particles, Sn63/Pb37 powder, and an epoxy resin

USPAT 5,853,622 – conductive adhesive comprising a high melting point metal powder, a low melting point metal powder (solder), and a thermosetting resin

USPGPUB 2002/0114726

USPGPUB 2002/0079135

Communication

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID M. SINCLAIR whose telephone number is (571)270-5068. The examiner can normally be reached on Mon - Thurs. 8-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego F. Gutierrez can be reached on (571) 272-2245. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Diego Gutierrez/
Supervisory Patent Examiner, Art Unit 2831

/D. M. S./
Examiner, Art Unit 2831